Impact and Issues of Sarbanes-Oxley: Data Warehousing

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Question

What is the impact of the Sarbanes-Oxley Act on Internal Control Reporting Requirements on data warehousing and data management?
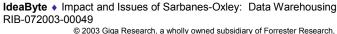
Answer

Sarbanes-Oxley (SOA) increases requirements for financial reporting consistency, procedures, documentation and review by responsible audit committee staff and management. SOA is still in the early stages of implementation, and interpretations from a legal, auditing and IT perspective are still evolving. Therefore, the challenge for IT managers is to combine caution with the need to act quickly to accommodate regulatory mandates. The direct impact on information technology systems, and data warehousing in particular, is not in the surface structure of the legislation. However, Giga believes the impact will be to raise the bar on the requirements to audit *through* the computing system, including the data warehouse, rather than merely auditing *around* it. For example, previously it was sufficient to pass muster to verify that the inputs add up to the outputs minus the records or transactions rejected as invalid. Now it is necessary to demonstrate that the implementation of the validation step in the software is consistent with business rules (or policies) over which management has oversight. It is necessary to understand the transformations and metadata by which the transactions are manipulated, reported and used to make decisions. IT systems relating to financial transactions, revenue recognition, expense management and, for example, the profitability data warehouse, will be directly impacted as opposed to inventory control, customer service or market trend analysis (which will not be).

The recommendations for IT managers and professionals from a data warehousing (and data management) perspective include:

Look for opportunities to take the data warehouse (DW) off the critical path of Sarbanes-Oxley by arguing to the audit committee and executive management that the DW is merely a different representation of the same basic transactions, used for decision support and business intelligence, not statutory financial reporting. Of course, this argument works both ways — if the DW is a transformed copy, then IT must be able to demonstrate to the auditors the traceability backwards to the source. Finally, if a profitability data warehouse is being used to make executive decisions based on the financials, then it is back on the critical path and IT should address the following recommendations regarding traceability and metadata.

Promote transparency, consistency and auditability of IT financial systems, including DWs, by collecting, using and understanding metadata, the rules of interoperation between systems. One challenge is information overload — too much data. Leveraging metadata can be an important way of selecting and identifying the critical path through the enterprise information supply chain amid the tidal wave of data. For further details on what metadata is and how to leverage it, see Planning Assumption, The Metadata Grand Challenge: Metadata-Driven Design, Lou Agosta.

Be able to reconcile the data in the data warehouse with that in the operational system — for example, if a legacy system has a data quality issue and the data is corrected prior to being loaded in the data warehouse, then the two systems will present a discrepancy and an audit issue. If the legacy system cannot be repaired because it is too old, not understood or not well documented, the solution is to (1) either document the situation so that it can be adjudicated with the audit committee as an exception or (2) store both values — the wrong value and the corrected values — so that the data can be reconciled.

The requirement for storage, retention and ease of access to data for auditing purposes, not only in data warehouses, but especially in transactional systems, is likely to be increased by SOA. One thing *not* to do — data warehouses are not archival systems that store data in the transactional format. They are decision support systems that support analysis. The underlying data model is fundamentally different. Do not allow the data warehouse to become a dumping ground for archival data that does not belong there. For further details on how to do archiving right, see Planning Assumption, [Data Life-Cycle Management Strategic to Effective Storage Management](#), Anders Lofgren. The statutory requirement to keep data for seven years (for IRS audit purpose) is not new in itself. What is new is the increasing likelihood that the data will actually have to be accessed. Make sure it is available by testing the restore, recovery and response process.

A similar consideration applies to document management. SOA raises the bar on document access to support the audit, and many document management vendors are repositioning to sell into the market thereby created (see Planning Assumption, [Enterprise Content Management: A Comprehensive Approach for Managing Unstructured Content](#), Connie Moore and Robert Markham). Much of the activity here involves organizing documents for ready access to build a legal defense against the possibility of a future breach of the SOA mandates.

Finally, treat SOA as an opportunity to implement an information quality safe harbor and start telling the truth (whether good or bad) about the level of information quality in the firm with specific references to basic financial transactions and how these are transformed in being moved through the enterprise information supply chain.

Sarbanes-Oxley invites a solution rather than a tool or technology. Firms will need to establish procedures, deploy consultants, document processes and provide oversight rather than build a specific user interface, data store or connectivity. Sarbanes-Oxley embodies a usability challenge — it is complex, detailed, convoluted and obscure. "Risk analysis services" is one of the new names for auditors. Query and reporting tools, databases and related automation will be essential and useful to surfacing and managing the data required to demonstrate compliance or mount a defense in the face of the allegation of non-compliance.

Additional Research

For additional background, a useful 72-page FAQ on the subject is provided at www.protiviticonsulting.com/, a firm that provides risk analysis consulting services.